# MARINE REVIEW.

VOL. X. CLEVELAND, O., AUGUST 2, 1894. No. 5.

## Two St. Clair Canals—Other Improvements.

Preparations are now being made among executive officers of the Lake Carriers' Association to take up, at the next annual meeting of the association in Detroit, the matter of urging congress to provide for a second cut or canal through St. Clair flats. The present canal is not in keeping with the demands of commerce that will be greatly increased upon the completion of the second lock at Sault Ste. Marie and the wide 20-foot channel throughout the lakes, and there is no doubt of active and urgent support from the government engineers in presenting the matter to congress. An expensive canal will not be required, and no comment is needed on the advantages of a second channel as against increased width in the present one. The nature of the soil at the point where it is proposed to make the second cut is understood to be such that no walls will be required.

Improvements on an extensive scale in the Detroit river below Ballard's reef are also contemplated. It is understood that Gen. Poe has recommended immediate action on an increase of width in the Lime-Kilns cut to 600 feet, and appropriations amounting to about $57,000 that are now practically in hand will be used at once in increasing the width of the channel in this part of the river, aside from the cut, to 800 feet in accordance with the 20-foot channel project. A Canadian dredge, now at work in the vicinity of Bois Blanc island, is removing New York shoal, and other similar obstructions in this locality will also be hurriedly removed.

In pursuance of the 20-foot channel work on Lake Huron just above the entrance to St. Clair river, a channel 900 feet in width and 20 feet deep has been dredged, and vessels can pass between the dredges at work in that vicinity with safety.

## Legislative Matters—New Laws.

After all the trouble to which officers of the Lake Carriers' Association were subjected in the matter of raft towing regulations, the subject must now go over to next year and again be rehearsed through committees and both branches of congress. The quiet actions of Gen. Alger of Michigan with the commerce committee of the senate is the cause of this trouble. The conferees of the house and senate on the river and harbor bill were unable to agree on a compromise regarding the regulations, and rather than accept the senate amendments the vessel owners asked that the subject be held over.

The feature of the Lockwood immigration bill prohibiting the employment on lake vessels of aliens who have not resided in this country six months will also go over to the next congress.

Both houses of congress have within the past week passed a bill providing that life-saving stations on the Atlantic coast shall be opened on Aug. 1 and continue until June 1 succeeding, and on the lake coasts from the opening to the close of navigation, surfmen serving more than eight months to be paid $60 a month during the entire service. Another measure passed by both houses extends the benefits of the marine hospital service to keepers and crews of the life-saving service. These bills now require only the signature of the president.

A bill authorizing the establishment of a fog signal at Kewaunee, Wis., has also passed both houses.

## Renewed Life in Lake Passenger Business.

A sort of a renewed life is shown in passenger business on the lakes this season, the various lines sharing a big patronage in common with the new steamer North West. It is more than probable that ship builders will profit during the coming winter by this fresh interest shown in lake travel, as negotiations are now pending for at least four new passenger ships. Four governors of states took passage during the past week for lake tours. Governor McKinley of Ohio with members of the family of ex-Gov. Merriam of Ohio left Cleveland Wednesday on the North West in company with Mr. M. A. Hanna and other Cleveland friends. Governor Rich of Michigan was also a passenger on the big boat. Governor Pattison of Pennsylvania and friends spent the week on the Lehigh Valley steamer Saranac, running betwen Buffalo and Chicago, in company with President Wilbur of the line and other Lehigh officials. Governor Francis of Missouri made the trip from Chicago to Sault Ste. Marie on the Lake Michigan and Lake Superior Transit Company's steamer Manitou. It is expected that the presidential party, talked of some time ago for the North West, will be on that boat next week, or the week following. Secretary Lamont of the war department, with Mrs. Cleveland and other ladies of the cabinet, will be in the party, but it is not probable that the president will accompany them.

## Lake Freight Matters.

Although reports of soft coal contracts at 40 cents from Ohio ports to the head of Lake Superior have been numerous of late, careful inquiry in the Cleveland freight market would indicate that business of this kind amounts to but about 400,000 tons. Early in the season, a few blocks of coal were taken at 35 cents, but those engagements have been fulfilled. Vessel owners are now fighting shy of coal contracts at low rates, but it must be admitted that the offer of 40 cents on contracts was accepted to a greater extent than was expected. The active movement of soft coal, which was long awaited, has materialized within the past few days and there are some advances in rates. Forty cents has been paid to the head of Lake Superior on single cargoes, and the demand for Lake Michigan tonnage is such that there is little doubt of improvement on the rate of 50 cents to Milwaukee that has prevailed during the week. Brokers are not parties to any of the Lake Superior coal contracts, and in this there is an advantage for the vessels.

Hard coal shipments from Buffalo show a gain of about 64,000 tons for July over the same month last year, and the shipments for the season to Aug 1 are at 1,045,079 tons, against 1,187,125 tons on Aug. 1, 1893.

FORTY-FOOT SLOOP YACHT PILOT.—DETROIT BOAT WORKS, DETROIT, MICH.

## A Detroit-Built Schooner Yacht.

A schooner yacht just launched by the Detroit Boat Works, Detroit, Mich., is illustrated in the accompanying engraving. The boat was designed by Richard P. Joy of Detroit for Henry B. Joy and John S. Newberry. She is 40 feet over all, 28 feet 6 inches water line, 3 feet 9 inches draft and 9 feet beam. She carries 839 square feet of working canvass (lower sails), and has a displacement of 6½ tons, The boat is intended for cruising, and is fitted with sleeping accommodations for six people. Her name is Pilot, and she will hail from Grosse point. Work upon this boat will compare favorably with that of any of the eastern builders.

## Lake Superior Mining Matters.

Under date of June 20, 1894, Mr. W. D. Rees of Cleveland, treasurer of the Lake Superior Iron Company, submits to stockholders a trial balance from the books of the company at the close of business April 30, 1894, and also other matters that usually accompany the annual report. The company has expended in the further development of the Section 21 mine $69,456.25, and compromised the claim of the Winthrop Mining Company, growing out of a defective mineral reservation in Section 21, by the payment of $20,000 for such rights as the Lake Superior Company requires and certain machinery and privileges upon adjoining property. A dividend of $1 a share was paid on Jan. 10, and another of the same amount on April 16. The gross receipts for the year, excluding sales of real estate, were $1,210,574.74; total expenses $938,162.30; net profits, after crediting depreciation account with $119,456.26 to offset reduction in valuation of vessels, cost of special repairs at mine, purchase of Winthrop rights, etc., $120,470.93. The ore statement for the year is as follows: In stock at mines, May 1, 1893, 294,426 gross tons; mined during the year, 275,736 tons; shipped from mine, 329,610 tons; delivered to customers, 342,424 tons; in stock at mine April 30, 1894, 240,552 tons. The trial balance from the books of the company at the close of business April 30, 1894, is as follows:

BALANCE SHEET, APRIL 30, 1894.

| | | | |
|---|---|---|---|
| Real estate and mining property | | $1,273,103 90 | |
| Steamships (six steamers | $755,000 00 | | |
| Iron ore | 635,211 19 | | |
| Agents inventory, etc. | 39,719 13 | | |
| Bills receivable | 144,777 97 | | |
| Accounts receivable | 116,379 66 | | |
| Cash | 222,099 78 | | |
| Atlantic Iron Co. stock | 25 00 | | |
| Brown Bonnell Iron Co. stock | 3,950 00 | | |
| Rents | 200 00 | | |
| Office furniture | 222 50 | | |
| Cash (Boston office) | 144 90 | | |
| | | 1,917,730 13 | |
| Treasury stock | | 400,000 00 | |
| Steamship operating account, 1894 | | 9,864 86 | |
| Accounts payable at mine | 69,037 62 | | |
| Accounts payable at Clev'd office | 2,461 73 | | |
| | | | $71,499 35 |
| Advance payments on ore undelivered | | | 222,840 76 |
| Capital stock | | | 2,500,000 00 |
| Guaranty | 259,951 57 | | |
| Depreciation | 416,640 83 | | |
| Profit and loss | 129,766 38 | | 806,358 78 |
| | | $3,600,698 89 | $3,600,698 89 |

During all of the changes that have occurred in Lake Superior mining business, the Marquette range has held its position remarkably, due, no doubt, to the facts that the hard iron ores are now better prepared for furnace use, that many of the ores are of high Bessemer grade, that in transportation less moisture is absorbed than by the softer ores of the Gogebic and Mesabi ranges, and that the distances covered in carrying the Marquette ores to lower lake ports are less than from the other ranges, except the Menominee. In addition the companies operating on this range were, as a rule, generally longer established and stronger financially than the most of those operating the Gogebic mines. Some of them own vessels, and most of them have superior machinery equipment at the mines.

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Although a cry of Standard oil freeze-out was set up when the Rockefeller interests assumed control of the principal mines on the Mesabi range upon the failure of the Merritts, there are people very close to Mr. John D. Rockefeller in Cleveland, who say that he did not relish the idea of being forced to foreclose upon the obligations of the original owners of the mines, when he was compelled to do so in order to protect his own interests as a creditor. The load and the care attending it, they say, has been the cause of a great deal of worry to him. In view of the great change that has occurred in the prospects of the range, especially as regards prices of ore, since the boom attending its opening, it would seem that there is a great deal of truth in these statements.

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That shipments from the Mountain Iron and Oliver properties, Mesabi range, are very heavy, may be judged from reports coming from the mines. In one day recently there was mined at the Mountain Iron 8,100 and the shipments of three consecutive days aggregated 24,000 tons. A record at the Oliver is 5,600 tons mined in a single day. The uncovered ore body of the Oliver is now 1,200 feet long and 600 feet wide. A reduction is said to have been made a short time ago in the Oliver royalty.

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Mr. John N. Glidden, who is connected with Tod Stambaugh & Co., Cleveland, says the Biwabik mine, Mesabi range, will begin shipping some ore in a few days, and may possibly bring down 200,000 tons this season. If reports from the mine were to be considered the output would be 400,000 tons or more.

## Oil Fuel on Chicago Harbor Tugs.

F. U. Adams, chief smoke inspector of Chicago, writes us as follows regarding tests with oil for fuel on harbor tugs:

"I have not yet made an official report but shall do so in a short time. I will give you a brief report of what we have done with fuel oil. The city council leased from the Vessel Owners' Towing Company the tug Black Ball No. 2, for the purpose of making experiments. I secured from the treasury department at Washington a permit allowing us to burn oil from tanks located 1 foot or more from the fire-box of the tug. Two tanks were placed in the tug partially filling the space occupied by the coal bunkers. These tanks hold 650 gallons of oil. They are so constructed as to prevent the swashing of oil. A small pump in the engine room forces the oil from the tank into a small pressure tank, holding twenty gallons, from which it leads to the burners. In the first experiment two burners were used and sprayed oil through the furnace door. This was not the success we desired and was objectionable on account of the noise, and we had difficulty in maintaining the required amount of steam. The burners were then dropped below, running up through the ash-pan. This gave us enough steam but the noise was increased. The burners were then taken out and placed in what is technically known as the front end of the fire-box and were so arranged that they threw the oil towards the furnace door, striking against an arch which deflected it back towards the flues. This solved the problem so far as the steam capacity was concerned and there was an entire absence of smoke.

"In a recent test the Black Ball made a trip to Waukegan and return, a distance of 70 miles, in competition with the Bob Teed of the Dunham Towing Company's line, for the purpose of ascertaining the consumption of oil and of soft coal and the relative cost of each. The Black Ball consumed 650 gallons of oil worth $11.62, and the Teed burned six and one-half tons of coal worth not less than $21. Both boats maintained a full capacity of steam during the entire trip, and as the Teed is the faster boat she averaged a little over twelve miles an hour as against the Black Ball's eleven miles and a fraction. Because of this, certain papers friendly to the soft coal interests attempted to construe the result as a victory for soft coal.

"The Black Ball is now fitted with an extra burner, a very small one, which is used to maintain steam when the boat is not running. We can hold steam at eighty-five pounds, for any length of time with a consumption of less than two gallons of oil an hour, or about 70 cents per day. To do the same work requires about one and one-half tons of coal worth not less than $5, to say nothing of the smoke nuisance, ashes caused by firing, and other expenses incident to the use of coal. A more accurate report than this will be prepared later.

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## Society of Naval Architects and Marine Engineers.

Owing to delay caused by fire in the publishing office, the transactions of the Society of Naval Architects and Marine Engineers for 1893 have just been distributed among members. Secretary Capps announces that the next annual meeting of the society will take place in New York city, Nov. 15 and 16, and that full particulars as to papers to be read, etc., will be forwarded to members in due time.

The transactions for 1893 are contained in a volume of 262 large pages and fifty-eight plates, which is, of course, almost entirely made up of the procedings of the first general meeting held in New York in November last. W. L. Capps, secretary and treasurer of the society, and whose address is 1710 F. street, N. W., Washington, D. C., is certainly deserving of great praise for the excellent manner in which the several important papers and the discussions on them is put into print. The whole work is very carefully edited, the illustrations are clear and distinct in every case, and aside from the report of the proceedings of the marine and naval branch of the engineering congress held in Chicago in connection with the World's Columbian Exposition it is the most valuable book on marine engineering and naval architecture ever issued in this country. A paper of special local interest in the proceedings is that of Mr. John F. Pankhurst of the Globe Iron Works Company, Cleveland, on "The Development of Ship Building on the Great Lakes."

In several issues of the REVIEW following the New York meetings, extracts from a number of the most important papers were published. The meeting in November next will undoubtedly be very largely attended as there is now every assurance of success with the society.

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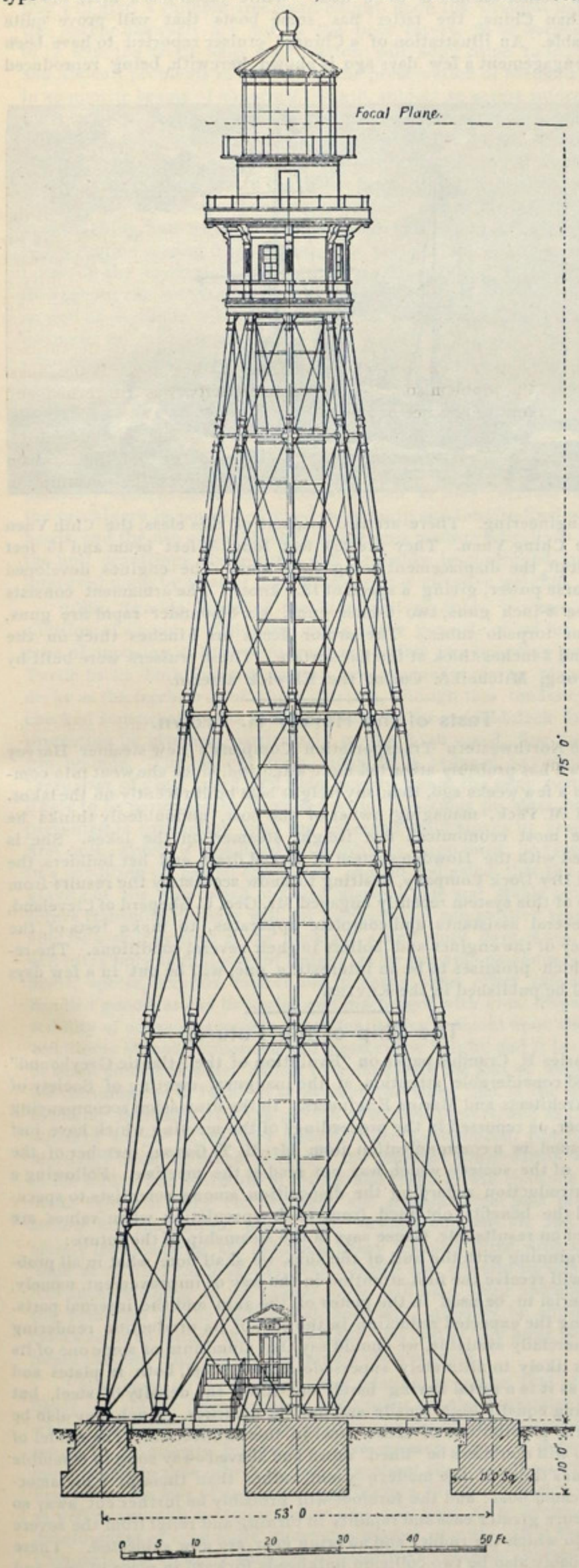
A strange electrical accident was that which happened at the Norfolk navy yard a short time ago, when two men were killed by lightning while standing beneath the hull of a new steel cruiser which was upon blocks in dry dock. The explanation is that the ship was insulated by being placed upon the dry wooden blocks, and the men, with their heads near the hull and their feet in puddles of water, acted as conductors for the electricity with which the ship became charged by the lightning. All the compasses and similar instruments on board the cruiser were spoiled at the time. Ships so docked in future will be furnished with metal conductors to the ground.

## An Immense Light Tower.

The accompanying engraving represents the latest light tower design of the United States light-house board, which has been prepared for erection at Cape Charles, Va., and is believed to be the highest of its type in existence. As will be seen, the tower is in form an octaganol




pyramid, built up of one vertical central tube surrounded by eight tubular struts thoroughly braced together. The foundation is hard sand, which, in spite of a popular impression to the contrary, makes an excellent foundation when it is prevented from spreading. At Cape Charles the stratum is so hard that it is impossible to drive a 1½ inch iron bar more than 6 feet into it under the impact of a heavy sledge hammer. A similar tower is also to be erected at Hog Island, Va. The engraving is from Engineering.

## To Meet the Question of Grain Shortages.

A special meeting of the finance (executive) committee of the Lake Carriers' Association was called in Cleveland Tuesday to consider the following communication from the vessel owners of Duluth and Superior:

James Corrigan, President, Lake Carriers' Association, Cleveland, O.—Dear Sir: A number of vessels engaged in the grain carrying trade from the head of the lakes to Buffalo, have recently suffered heavy losses by reason of the excessive shortage (some 5,000 bushels in the past forty days) which have been discovered when the vessel had discharged her cargo. Inquiry into the cause of these shortages has developed nothing beyond the fact that the vessel interests, under the present form of bill of lading, are powerless to prevent or correct them. It has been suggested that the vessel interests combine upon a clause, to attach to all grain bills of lading, providing that the burden of proof be transferred from the vessel to the shipper, as is the case with railroad bills of lading, and with this object in view, the Vessel Owners' and Agents' Association of Duluth and Superior this morning met and fully discussed the following clause:

"It is understood and agreed that the vessel waives all claim for payment for overage and shall not be responsible for shortage in excess of one-third bushel per one-thousand bushels carried. Vessel to deliver all grain carried and collect freight upon actual out-turn."

The sentiment was unanimously in favor of the adoption of the above clause to attach on after Sept. 1, 1894, to all grain bills of lading. It was suggested that the matter first be submitted to your association and also individually to the different managers and owners of vessels engaged in the grain carrying trade for discussion, and in the event of its general approval that agents be instructed to accept grain cargoes only upon these conditions.

I trust the question will have proper discussion by your association and request that you advise me as soon as possible of their action.

CHAS. W. LELAND, Secretary.

DULUTH, MINN., July 27, 1894.

Mr. James Corrigan, president of the Lake Carriers' Association, was in Duluth when the action above referred to was taken, but the communication was forwarded to Cleveland for the purpose of bringing the matter before all lake vessel owners in a formal way. Of course the subject is not a new one, but the proposition to adopt uniformly a clause of this kind governing shortages and overages in bills of lading is new. It was agreed that the action of the association at Duluth was timely and wise, and the committee of the general association regretted that it would be impossible to compel all members to take such action, but it was recommended that members instruct their agents at Duluth to insist on the clause being inserted in their bills of lading. All members of the association will be informed of this action of the committee. Of course it is to be expected that grain shippers will object to such a provision in bills of lading, and the outcome of the struggle, which it is proposed to inaugurate on Sept. 1, will be looked to with interest.

## A Very Old Letter.

Readers of the REVIEW will recall several communications in these columns of late from Capt. Charles Gale, who went out from the lakes on several ocean voyages in the fifties and who has been writing regarding numerous vessels that made such voyages. The letters have attracted considerable attention. Mr. Rollin S. Giffin, now with the National Safe and Lock Company, Cleveland, was on a voyage from Cleveland to Liverpool with Capt. Gale, when a boy in 1859, on the Deshler, a boat owned by his uncle, John F. Warner of Cleveland. She took over staves and brought back pig iron, leaving in May and returning in September. Mr. Giffin visited Capt. Gale at his home in Sombra, Ont., a short time ago and surprised the venerable vessel master by producing a letter written in 1861, and of which the following is a copy:

Rollin S. Giffin, Albany, N. Y.:

My Young Friend: Since you were with me some time ago in the Deshler I have had command of the barge D. C. Pierce from England to Havana. From there I loaded with sugar and left on the 25th of March for London, Eng. But after six days out came on a heavy gale from the eastward and the ship lost sails and rudder and small spars, and when the storm abated I found I was in longtitude 74 W. and off Cape Henry. I then ran for Norfolk and got there on the 4th of April, where I took cargo for caulke, but when I had finished all repairs the rebels took the Pierce and sank her. They took all I had and put me in prison where they kept me fourteen days. They then let my daughter and myself go, and I went in a boat with my crew to the frigate Minnesota where I met Com. S. H. Stringham, who used us very kindly and sent us all to Boston in the gunboat Pembroke. Since then I have had command of the schooner Saranac.

CHARLES GALE.

CLEVELAND, Dec. 2, 1861

## Tips From the Man on the Dock.

Ye man on the dock, an old relic from "away back," has recently been reflecting on the changes that have taken place in doing business, especially in the matter of ship broking during the past three decades or so. In the old time all the chartering was done on the river in Cleveland and almost all with the captains of vessels. A good deal more hustling was done in those days for a charter than is necessary now, when shippers, vessel owners and brokers are huddled together in one or two buildings up town. To be obliged to get down to the river by daybreak every morning after a breezy night, walking three or four miles up and down to discover the fresh arrivals, and then lay siege to the "old man" of some light or lumber loaded vessel wanting a load of coal, stone or grain, with visions of a five or a ten dollar bill in the foreground, was a part of the necessary efforts of the successful ship broker of five and twenty years ago.

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There were three broker firms with offices on the dock at that time, viz.: H. J. Webb, Palmer & Pennington and Henry C. Miller, all of whom lived by their wits, and did not hesitate to lure away vessels from each other by holding out extra inducements such as quicker dispatch or higher freight. Sometimes the "old man" who was a mighty important factor in those days, was influenced by a mild Yara, a few rounds of sour mash or an evening up town. These rarely failed to make him solid with the broker who had thus outgeneraled his envious competitors. But good feeling among the brokers always predominated; indeed I never learned of a single instance of bad temper or ill-feeling manifested.

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I once had occasion to visit the office of Palmer & Pennington, located on the dock just above the Main street bridge. This was a prominent place of resort for vessel captains during the winters, and having business with some of them I thought probably I should find them at this place. The office consisted of one room, and when I entered I found the place full of tobacco smoke like a dense fog. The room was full of captains smoking and telling yarns, but they were so dimly outlined through the smoke that had the search light been invented at that time, I should have desired to turn one on those skippers through the smoke, to enable me to recognize them and possibly to discover those I was looking for. I afterwards ascertained that tobacco and clay pipes were furnished free to all guests during the winter. On the basis of the crowd thus brought together and the good feeling created the way was smoothed for a good many vessel sales during the winter, and charters for cargoes in the spring.

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Business in the old days was very irregular as all were sail vessels. During calm weather or adverse winds arrivals were few and business was light. When favorable winds came a big fleet would often arrive in a single night, and vessels show up the next morning to the broker (down before breakfrst) as thick as Canada soldiers. Then there was lively hustling among the boys for business. Some of the vessels wanted loads; others came on orders from Buffalo for coal, signed, perhaps, with the familiar name of Hi Smith, for when the vessels coming to Cleveland with cargoes, lumber, etc., were insufficient to accommodate the outgoing business, Buffalo brokers chartered vessels to make up the deficiency. These usually came in fleets. Sometimes the charters of a week or ten days would arrive here all together, then the devil take the hindmost at the coal docks. Some tall swearing and kicking would result, of course, but it did no good. Happily the era of steam craft came and such vexation and irregularity of business was to occur no more.

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Henry C. Miller has passed away; Mr. Webb and Mr. Palmer are still in the arena but engage no more in gladiatorial combat. The finger of time has touched them lightly; their eyes are not dim nor their natural force abated—very much. A good measure of success has resulted from their untiring labors since the day of small things down on the docks, and the nightly loaf is no longer dependent upon the labors of the morning. Yes, a great change has taken place, largely for the better, but the ambitious vessel owner of today who contracts to carry grain at seven-eighths of a cent a bushel from Chicago to Buffalo can hardly help thinking of the time he took a 20-cent rate for the same voyage, five and twenty years ago.

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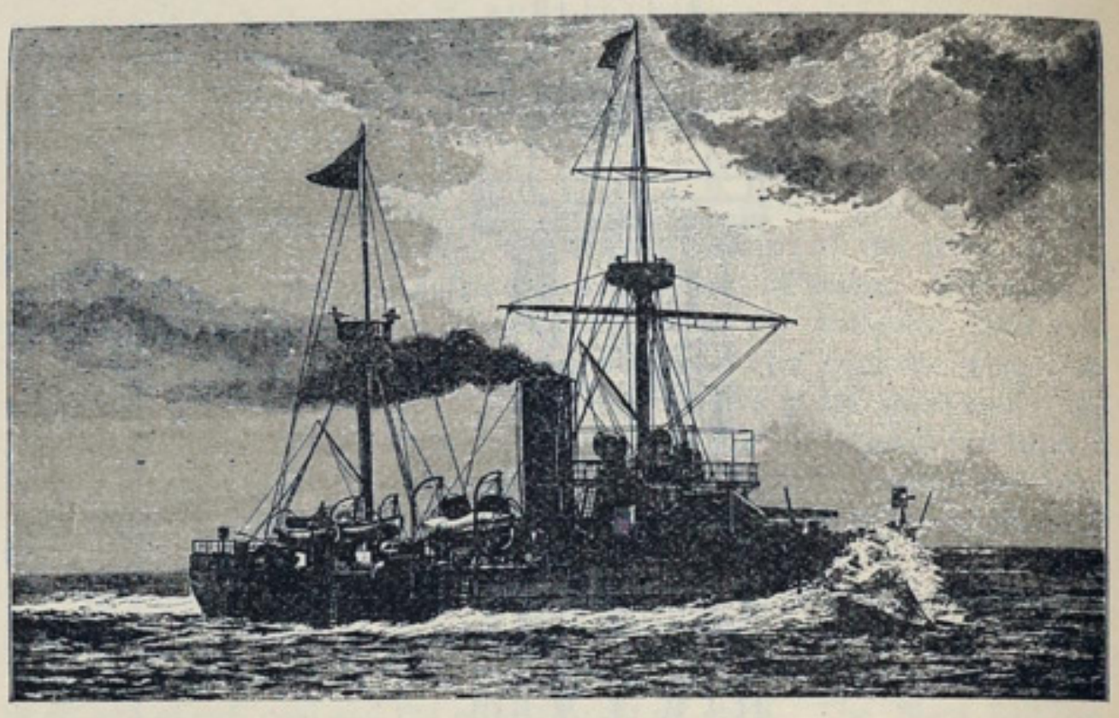
The leading technical journal of the world, Engineering of London, joins in complimenting the REVIEW on the success of the recent large edition. The following is from its issue of July 20: "The MARINE REVIEW Cleveland, O., has issued a double number devoted principally to the twin-screw passenger steamer North West, particulars of which are given in this issue. The publication contains seven two-page plates, and thirty-six pages of letterpress interspersed with numerous engravings, and is a capital specimen of journalistic enterprise on the lakes. The MARINE REVIEW does us the honor to mention our Campania edition as the ideal it aspires to attain to, and we must admit that it has proved itself an apt and capable scholar."

## A Chinese Cruiser.

Among ship builders and naval architects the reports of engagements between vessels of the Japanese and Chinese navies will be of special interest when information in detail regarding the performance of the ships in actual warfare is to be had. While Japan has a more modern navy than China, the latter has some boats that will prove quite formidable. An illustration of a Chinese cruiser reported to have been in an engagement a few days ago is shown herewith, being reproduced



from Engineering. There are two cruisers of this class, the Chih Yuen and the Ching Yuen. They are 250 feet long, 38 feet beam and 15 feet mean draft, the displacement being 2,300 tons. The engines developed 7,000 horse power, giving a speed of 18.6 knots. The armament consists of three 8-inch guns, two 6-inch guns, six 6-pounder rapid fire guns, and four torpedo tubes. The armor decks are 4 inches thick on the slope and 2 inches thick at the flat surface. These cruisers were built by Armstrong, Mitchell & Co., at the Elswick arsenal.

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## Tests of the Harvey H. Brown.

The Northwestern Transportation Company's new steamer Harvey H. Brown has probably attracted more attention, since she went into commission a few weeks ago, than any freight boat built recently on the lakes. Capt. E. M. Peck, managing owner of the boat, undoubtedly thinks he has the most economical, fast freight steamer on the lakes. She is equipped with the Howden system of forced draft, and her builders, the Detroit Dry Dock Company, desiring to know accurately the results from the use of this system recently engaged Mr. Geo. C. Shepard of Cleveland, with several assistants and complete apparatus, to make tests of the efficiency of the engines and boilers in their several conditions. The report, which promises to be an interesting one, will be out in a few days and will be published in the REVIEW.

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## The Ship of the Future.

Charles H. Cramp's paper on "Evolution of the Atlantic Greyhound" attracted considerable attention at the inaugural meeting of Society of Naval Architects and Marine Engineers. In the discussion accompanying this paper, as reported in the proceedings of the meeting which have just been issued, is a communication from Mr. H. T. Gause, member of the council of the society, which was not read at the meeting. Following a short introduction regarding the disposition among scientists to speculate and the benefits obtained from such speculation when values are hazarded on results, Mr. Gause says of the steamship of the future:

"Beginning with the hull of the ship, we shall note what in all probability will receive the first attention in the way of improvement, namely, the material to be used in the plates of the skin and the internal parts. Assuming the expected reduction in the cost of its production rendering it commercially available, we should say that aluminum or some one of its alloys is likely to ultimately supersede iron or steel, both in plates and shapes, as it is a metal having barely one-third the density of steel, but possessing equally high tensile and ductile qualities. Much may also be said of the possibilities of nickel steel in this connection. The model of the ship will doubtless be "fined" down and shaved away so as to resemble in its lines those of the modern yacht rather than those of a metamorphosed canal boat; and the forefoot will probably be further cut away so as to insure greater ease and rapidity in turning and relief from the severe strains to which the rudder and steering gear are now subjected. There will probably also be two collision bulkheads forward in place of one, and the bracing will be above criticism even when taking account of the pressure of water, in addition to that produced by its columnar height, which will be due to the continuing forward motion of the ship against the increased inertia of the inrushing water through a rent at the bow. In attempting to suggest what may be the principal dimensions of future

steamships of the largest class, it is necessary to consider first the available depth of water in the terminal ports of the ocean lines. At present this is but little over 25 feet, and in steamers of the size of the Campania, there exists no doubt in the minds of naval architects that the extreme limit of length has been reached in its relation to the depth of the hull, that will give a suitable freeboard height upon the draught named. If the harbor channels are not, in the near future, to be deepened say 8 to 10 feet, the art of ship construction will soon come to involve new and difficult problems in relation to the preservation of adequate stiffness in composite beams of abnormal length, subject to severe internal pulsations and provided with a shifting and but partial external support.

"Should the conditions of transatlantic service justify increased hull depth, the probable practical limit in length will reach 800 to 900 feet, and the beam will follow in the usual proportion, having due regard for the requirements of speed and sea qualities. But as the internal stress of any sea-going hull fitted with high-power machinery is largely made up of the motion arising from the moving parts of the engines, and which takes on the mysterious forms that are transmitted therefrom to and throughout the entire structure in the sensations of nodular undulation, as well as rhythmic vibration, so difficult to locate and to mechanically estimate, we may expect in the near future to discover some effective compensation for this trouble to be applied specifically and locally to each engine on the broad principle of the resultant of divergent forces. This is even now being successfully accomplished in the case of some of the torpedo boats building in England, and it is fair to assume that if demonstrated there, it can be carried out on the larger scale of ocean practice. The question of stiffening the interior of ships' hulls will naturally receive more and more attention as they increase in size and the machinery in power. Arched thwartship and longitudinal wing bulkheads, and the use of double cellular bottoms made practically as strong as the hull scantlings themselves will probably be continued in use and improved upon by a better distribution of the effective weights.

"The 'tumble home' of the sides will probably increase, with the addition of a convex deflecting curve at the gunwale chord for the purpose of opposing as little resistance as possible to a boarding wave at sea. Turtle backs both forward and aft are gradually giving place to level decks as the freeboards of ships increase, though this tendency may be checked somewhat by the growing necessity for a shield-deck forward for protection in pitching, particularly on the high speed, fine-lined ocean greyhounds. The danger from 'pooping' is reduced to a minimum in these days of great speed and twin screws, hence the after turtle back is likely to be permanently dispensed with. A serious problem, however, is presented in connection with the enlarged hold spaces in vessels of the first rank, which, if not filled with ordinary cargo must be taken care of in a condition of partial emptiness, and so ballasted that the centre of gravity of the ship shall not rise above a safe and stable point. The future transatlantic liner will, for business and competitive reason, probably lie a shorter time at the dock and spend more days at sea, and if so, will carry only such classes of freight (as for example passengers' luggage, mails, specie, express matter and perhaps some other safe and easily handled goods) as can be loaded and discharged with great dispatch. The stability of ocean steamers is dependent at any moment upon the existing conditions of load, immersion and metacentric height, and it is customary to admit sufficient water ballast to compensate the loss of weight due to the consumption of fuel. It is evident, therefore, that as the quantity of the latter increases with the growth of motive powers, and as the fluctuations of weight in the hold become more pronounced, proportionrtely more care must be taken to insure the constant preservation of stability in the hull. The evolution of masts and rigging will continue until the ocean flyer will carry but two light and graceful steel pole masts, made hollow for ventilation, placed one forward and one aft and intended merely for steadying the ship in a heavy sea, and fitted with small navy 'tops' as stations for lookouts, search-lights and electric signals. Stockless anchors riding in the hawse pipes will hold their ascendancy, and the principle of the differential hoist will probably be applied to the cables so as to reduce the size, weight and cost of the huge steam windlasses that are required for the largest class of work.

"But above all minor questions relating to ships, that of speed is likely to hold the foremost place. To point out the particular line along which the development of the marine engine and boiler may take place would be manifestly impossible. Yet we may mention some things as more probable than others in bringing about the desired results. In the first place, the loss of power through friction and the duplication of parts, as well as through excessive wheel slip, will have to be overcome. The development of even more enormous motive energies than those of the Campania and Lucania must be realized if any notable shortening of the time of passage is to be accomplished. To do this, it is plainly necessary to introduce more screws, with correspondingly more engines behind them. In one of the latest additions to the United States navy, we have seen the excellent effect of such an increase of blade area. Let us, then, conceive of the steamship of the future as fitted, not with three, but with eight or ten bronze propellers, each making from 1,000 to 1,500 revolutions per minute, driven by high speed rotary electric motors running in oil. Suppose again, that the fuel for producing the steam be crude oil. Then assume that the water is evaporated in copper tubulous boilers under a working pressure of 250 pounds per square inch, with a strong induced, but not forced, blast delivered into a cluster of gas pipes incased in a funnel. Finally, locate these numerous propeller wheels in independent sets under each bilge of the ship. We have, in short, before our mind in this conception of the position, character and arrangement of a ship's motive power a possible forecast of events that may at least be considered as in line with the best and latest tendencies of mechanical development in the direction indicated. Then too, speed may, and probably ere long will be further accelerated by the discovery of some improved treatment for the outside of the skin, by which a mirror-like surface will be obtained, that will reduce to a minimum the friction of the hull in the water.

"Another trend will be toward a further extension of the principle of automatic action as applied to all of the operations that go to make up the management of the modern steamship. Whatever is now done by human agency, and whatever is left to individual attention and judgment will be sought to be accomplished by a train of mechanism, that shall not require the assistance of men. Some such application of this thought will probably be made in the near future by the invention of an automatic ship's brake, to be actuated by the motion of reversing the main engines, and so adjusted that when relieved of control it will close itself by the resistance of the water flowing forward as the ship goes astern, but when held in position ready for use it will form part of the skin plating and only open outward against a chock backing. A device like this may easily be conceived of in the shape of a strip of plate or a series of them, so placed as to swing outboard on a vertical axis imbedded in the ship's sides, and made water tight by an inner lining from frame to frame where they occur. There is also a valuable opportunity for improvement in connection with the rudders of ships. Whether to take them away from the stern altogether and depend upon side screws or to make them small enough to be beyond the risk of damage from wave action, but at the same time duplicate them in sets or leaves in order to retain their effective area, are questions that may safely be left to the designer. With the more general adoption of electric power on shipboard, it is safe to predict its early employment in this direction. It requires no stalwart imagination to foresee the entire control of the engines passing into the hands of the commander in the pilot house or on the bridge, by the simple intervention of a wire connecting an index and button at his side, with a small motor in the engine room, that operates a piston attached to the throttle bar.

"A wide field is thus opened for the inventive skill and ingenuity of the electrician. The electric ground trip has already become the subject of experiment as an infallible indication of the proximity of shoals or submarine obstructions. With the advent of two deck offices, one forward and one aft, the electric wire has already come into use as the best and quickest means of communication between the two; in fact, a telephonic service has been established not only for these two but for a dozen other stations throughout the vast structure. Fog horns of the future will all be blown by electricity; water tight doors (located in no case below the water line) will be opened by the same means; the whistles and syrens will be sounded at set intervals and automatically by the subtle current, and the search lights aloft will be flashed in any direction or revolved, or both, at the touch of an invisible hand and by an invisible power. And electricity will do even more than this. It will wind every clock on shipboard, and strike every bell with exact precision. It will announce every meal on time in every state room and other apartments of the ship and at the same instant. It will discourse exquisite orchestral music while dinner is being served, and will play the organ for the church service or the Sunday evening concert. Even the captain's log can be sent to the company's office on his reaching port, and can there be made to repeat the tones of his voice, and give without a flaw, the details of the voyage in his original phonographic dictation, and with the very howl of the tempest for the undertone of its story.

"But enough has been said to illustrate the rich quality of the discoveries that lie along the line of electrical suggestion. In closing, it only remains to refer to the possibility of utilizing a system of automatic sprinklers in the future ship's holds, such as are already in general use in our mills and factories for extinguishing fires as soon as started, and avoiding a dependence upon the watchfulness of attendants, or the enforced opening of air vents in closed apartments. Among the many suggestions made for providing alarm signals for the prevention of collision in fogs, it may yet be reserved for the steamship of the future to solve this problem by sending forward at very long range harmless but loudly detonating dynamite explosives, to convey a warning to any vessel within the radius of a half or even a full mile away. These and many other useful and wonderful things may become encouraging realities in the perfected 'Steamship of the Future.'"

# MARINE REVIEW.

*DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.*

Published every Thursday at No. 516 Perry-Payne building, Cleveland, O.
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The books of the United States treasury department contain the names of 3,761 vessels, of 1,261,067.22 gross tons register in the lake trade. The lakes have more steam vessels of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The number of steam vessels of 1,000 to 2,500 tons on the lakes on June 30, 1893, was 318 and their aggregate gross tonnage 525,778.57; in all other parts of the country the number of this class of vessels was,on the same date, 211 and their gross tonnage 314,016.65. The classification of the entire lake fleet on June 30, 1893, was as follows:

| Class. | Number. | Gross. Tonnage. |
|---|---|---|
| Steam vessels | 1,731 | 828,702.29 |
| Sailing vessels | 1,205 | 317,789.37 |
| Canal boats | 743 | 76,843.57 |
| Barges | 82 | 37,731.99 |
| Total | 3,761 | 1,261,067.22 |

The gross registered tonnage of vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

| | Number. | Net Tonnage. |
|---|---|---|
| 1889 | 225 | 107,080.30 |
| 1890 | 218 | 108,515.00 |
| 1891 | 204 | 111,856.45 |
| 1892 | 169 | 45,168.98 |
| 1893 | 175 | 99,271.24 |
| Total | 991 | 471,891.97 |

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.

| | St. Mary's Falls Canal. | | | Suez Canal. | | |
|---|---|---|---|---|---|---|
| | 1893. | 1892. | 1891. | 1893. | 1892. | 1891. |
| No. vessel passages | 12,008 | 12,580 | 10,191 | 3,341 | 3,559 | 4,207 |
| Ton'ge, net regist'd | 9,849,754 | 10,647,203 | 8,400,685 | 7,659,068 | 7,712,028 | 8,698,777 |
| Days of navigation.. | 219 | 223 | 225 | 365 | 365 | 365 |

*Entered at Cleveland Post Office as Second-class Mail Matter.*

IT WAS Gen. Alger, Michigan's greatest lumberman, who quietly went on to Washington, and while the river and harbor bill was being considered in the commerce committee of the senate had the raft towing regulations, as they passed the house and as recommended by the army engineers, changed so as to grant greater license to rafts in the highways of the lakes than is accorded to the thousands of vessels engaged in regular commerce. He made a grand *coup de tat* and returned home. But his statements and his judgment on the subject of raft towing were prejudiced and warped by personal interest, and his influence would not have been successful in changing the regulations if the whole work in the senate had not been conducted without the knowledge of the vessel owners, who had no chance to oppose it, or to even inform those who dealt with the matter immediately in the senate of the recommendations of the engineers or the investigation of the subject leading up to the adoption of the original regulations in the house. It is not, however, at all probable that Gen. Alger's wily move in this matter will result in the requirements of the bill as it passed the house being greatly changed. The conference committee was made acquainted with the facts by executive officers of the Lake Carriers' Association in Cleveland as soon as the action of the senate was reported, and as a last resort, if necessary, the matter may be taken up again in the house or senate when the bill comes up for final passage. In fact, rather than see the senate amendments to the regulations adopted, the vessel owners would prefer seeing the whole matter dropped out of the present bill and let it come up as a fresh measure next winter. Rafting is a subsidiary interest on the lakes. Figures given in the report of the government engineers show that it is trifling compared with the great interests involved in the vessels and the commerce which is carried on in and by vessels. This fact should not deny the lumbermen fair and full opportunity to use the channels under such reasonable restrictions as will insure a moderate degree of safety, but as the protest of the vessel owners recites, it certainly does not entitle them nor can they in equity or good conscience or fairness, ask the almost absolute license which they would enjoy and practice under the senate amendments.

IN THE HOUSE OF REPRESENTATIVES on Friday a measure known as the shipping commissioners' bill was considered. This bill does not in any way relate to the lakes, but as showing the temper of the present congress regarding radical changes in shipping laws, such as changes tending toward free ships, for instance, the action taken may be regarded as of special significance. The committee on merchant marine and fisheries, of which Mr. Fithian of free ship fame is chairman, had recommended the passage of the bill referred to, which removes from United States shipping commissioners their jurisdiction over coastwise vessels. The desire for the repeal of several sections of the United States statutes involved came from the seamen's unions of the Pacific coast, who set up the general claim that the penal provisions of the shipping laws relative to desertion are contrary to American liberty, etc., and that they should not apply to American laborers in any department of domestic industry. Of course, in event of repeal of these laws, the slow process of civil courts would be the only remedy of the vessel in enforcing coastwise seamen contracts, and protests against the passage of the bill from ship owners and commercial organizations were numerous, and in view of evident defeat of the measure, Mr. Fithian and his associates on the committee were forced to withdraw it. It will not be heard of again in the present congress.

A FEW YEARS ago there was no distinction made between steamers and consorts when coal shippers had cargoes to go forward. Now it is almost an impossibility at times to find a cargo for a consort, especially in the soft coal trade, and an effort has been made of late to even make a difference of 5 cents a ton in freight against the consort. This is due largely to the demand of shippers that they furnish fuel to steamboats upon chartering them for cargoes. But some times in adopting a policy of this kind there is evidence later of a lack of judgement in blind persistency under the rule laid down. These same shippers might profit by considering the fact that wooden towing steamers, built in the time of fore-and-aft compound engines, will burn in the round trip a great deal more coal than the modern steamer that carries 3,000 tons. This has reference to steamers of the type that carry about 1,800 tons or 3,000 tons in the combined cargoes of the towing boat and consort. Thus, if the fuel evil must be countenanced, the shipper loading such a pair of boats moves the same amount of coal and sells more fuel. The necessity of arranging for big steamers that can be depended upon for regularity in arrival at terminal points should not, it would seem, interfere at all times with the towing boats being given a chance.

THE DEMANDS of grain shippers in the matter of shortages have all along been regarded as arbitrary, and unjust, and it would seem that vessel owners should, in matters of this kind, at least, stand together when a remedy is offered. The action of the Lake Carriers' Association in recommending that bills of lading after Sept. 1 next be made to waive all claims for overage with relief from shortage in excess of one-third bushel per 1,000 bushels is fair and equitable, but it cannot be carried out without the earnest support of every individual owner in the association. The only pretence under which grain shippers can attempt to support the unjust position they have held in this matter is that of possibility of theft of grain during transit. and anyone at all acquainted with the methods of conducting lake business is well aware of the absurdity of such a claim.

EVIDENTLY there is need of serious inquiry regarding the advisability of the United States continuing the policy of preminms to builders of war ships. Including $400,000 to be paid for excess of speed in the cruiser Minneapolis, the aggregate of premiums paid by the government for excess of speed and horse power in ships of the new navy will be about $2,850,000, of which about $1,000,000 has gone to the Cramps of Philadelphia. There are in addition the Indiana, Massachusetts, Oregon, Iowa, and Brooklyn, and the torpedo boat Ericsson, all candidates for further speed premiums.

NOW THAT Engineer Ketchum of Chignecto ship-railway fame has cabled from England that $1,500,000 required to complete the railway is forthcoming from English capitalists, provided the government of Canada will extend the time on its contract regarding the project, it may be expected that periodical announcements of an early completion of the work will again be resumed.

## Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store at the principal points of accumulation on the lakes on July 28, 1894:

| | Wheat, bu. | Corn, bu. |
|---|---|---|
| Chicago | 17,362,000 | 1,526,000 |
| Duluth | 4,150,000 | ..... |
| Milwaukee | 849,000 | ..... |
| Detroit | 1,044,000 | 4,000 |
| Toledo | 2,124,000 | 40,000 |
| Buffalo | 1,423,000 | 217,000 |
| Total | 26,952,000 | 1,787,000 |

At the points named there is a net increase for the week of 1,903,000 bushels of wheat, and a net decrease of 6,000 bushels of corn.

## Notes from a Trip Down the St. Lawrence.

Several vessel owners have taken Europeon trips of late and others would probably take a vacation if they knew just where to go. The most unsatisfactory kind of an ocean voyage takes two months or six weeks at least. As for the fashionable summer resorts, they are an abomination to the ordinary lake business man, although I understand the secretary of one of our prominent ship building concerns is putting in several weeks at Bar Harbor. What I had in mind, however, was that the most enjoyable summer outing or pilgrimage lies at the door of the lakes. Primarily you might call it a trip through the Thousand islands, and that would fill two weeks full of pleasure and recreation of the genuine and not the dress-suit kind. You can take the State of Ohio or State of New York from Cleveland to Buffalo, and it may be remarked in this connection that the C. & B. line ought to replace the New York with a fine new boat next year and put the smaller boat on a short route between Cleveland and some other Lake Erie port. The company's business this year would seem to warrant such a change. But as it is they take you to Buffalo while you sleep. One way to get to Toronto is to go to Lewiston via the New York Central Railway, where one of the boats of the Niagara Navigation Company, the Cibola, Chicora or Chippewa, takes you down the river and over to Toronto—43 miles in two hours and ten minutes. Of course the Chippewa, designed by Frank E. Kirby, is the fastest of the three. She does him credit, and in fact he does not seem to have surpassed her for beauty and speed in any of the several other passenger boats that he has built. Returning you should leave these steamers at Queenston and take the electric railway, which will make stops at all points of interest along Niagara river and at the falls. At the end of this line will be found the coast-built steamer Columbian, a very expensive boat for this trade.

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But in the meantime you have reached Toronto and had dinner and a rest before taking one of four composite side-wheel steamers of the Richelieu & Ontario Navigation Company. These four boats are used for only the Toronto and Montreal service of this line, which is probably the largest passenger line on the lakes. The Quebec and Montreal, which are equal if not superior to any of the upper-lake side-wheel steamers, make up the Quebec and Montreal division. The Saguenay line is cared for by a steel, an iron and a wooden steamer, all three of which are first class, especially as regards sleeping accommodations and cuisine. No lake steamer excepting the North West equals these in this latter respect. However, there are some things about these boats that seem strange. The engines of the Saguenay, as well as the others, I suppose, were built by Harlan & Hollingsworth, Wilmington, Del. If there is a way of getting American built machinery, as well as American made hulls into Canada without trouble over the registry, it would seem that lake builders can compete with the coast yards for such work, and just now builders on the lakes ought to keep an eye on the fact that two of the four side-wheelers on the Toronto-Montreal division of this line may be replaced by new steamers next year. Leaving Toronto at 2 o'clock in the afternoon you reach the foot of the Thousand islands at Kingston early next morning. No description can do these islands justice. They are as far above words as their number is greater than their name signifies. There are nearly two thousand of them. The next stop is at Clayton. Clayton may be recalled by some of the readers of this column as the town that furnished two of the best marine engineers on the lakes—C. B. Calder, constructing engineer for the Detroit Dry Dock Company, and Chief Engineer Schneider of the "Iron" fleet, Detroit. The former is so well known that nothing need be said of him, and of the latter the least that can be said is that he gets all the fat out of an engine. Among the early archives of this town may be found a page or two concerning the cheese business in which Calder and Schneider were engaged. There is some reference to the fact that Calder insisted on making the boxes in the shape of steam engine cylinders, and in making two sizes he made them proportionate to the sizes of a compound engine. If this is true, it can be stated without doubt that they were built to stand the full pressure, although Schneider's cheese may have had a triple expansion instead of a compound pressure.

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It takes four hours to pass this island fairy land. The Canadian government sells about twenty-five of the islands each year at prices ranging from $700 to $2,000. If there is sufficient time, two or three days should be spent at Alexandria bay or Thousand island park. If not, you will arrive at Montreal in the evening. A half-hour later you can be on your way to Quebec, if you do not care to drive around Mount Royal. Quebec is worth all the journey and a week's time, aside from the beauties, in getting there, of the passage through the islands and 300 miles of St. Lawrence river scenery. Briefly it is the only walled city of consequence in America. Jacques Cartier landed there in 1535, and it is brim full of interesting history. Here is where French and English fought for the country, and although the English won, the French are still in possession. Of course the Americans took a hand, but after reading inscriptions such as "Here Montgomery fell," and "Here Montgomery was laid out," one loses interest. A view of the cloud-capped Laurentian mountains from the 350-foot citadel would be worth the expense of the trip.

But the pudding of this vacation dinner comes in a trip from Quebec to the Saguenay river, unsurpassed the world over for its peculiar scenery. The round trip may be made by the R. & O. N. Co's. boats, but if you do not wish to go over the same thing twice you can take the Quebec & Lake St. John Railway to Chicoutimi and join the steamer there on the down trip. This railway passes along the bank of the Batiscan river for about thirty miles. The mountain scenery is grand and the good fishing is attested by the large number of preserves, some of them owned by Americans. Instead of going direct to Chicoutimi you will decide to stop over at Roberval. The Roberval hotel will be a surprise to you as to food, and then that is the place you leave to reach the Grand Discharge where you catch the famous ounaniche, a large fresh water salmon, said to be the gamiest of fish. For the advisibility of stopping at Roberval or taking the Saguenay trip you need not take my word for it but judge from the fact that I there came across Mr. H. P. Lillibridge, known to all engaged in the lake business. He pronounces the scenery fine, and without a doubt he is the best traveled man ever in the business. It may not be known that he at one time was agent for the Pacific Mail Steamship Company in Japan. He registers from Colorado and is pushing a dozen or more mining claims near Cripple Creek, and is no doubt making more out of them than he would be selling iron ore at present prices. There may be considerable detail in this, and to make a long story short just put yourself into the hands of the R. & O. Navigation Company for a couple of weeks if you want a trip that will give as much pleasure as a European trip and cost one-fourth as much.

F. M. B.

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## To Control Engines from the Pilot House.

At the meeting of the Society of Naval Architects and Marine Engineers of New York some time ago, Col. Edwin A. Stevens of the Hoboken Ferry Company referred to an electric gear, which he had examined, and which is intended to control from the pilot house, in case of emergency, the engines of a ship. In describing the device he said:

"There are two handles in the pilot house with an interlocking device preventing the throwing of the links over the center; that is to say, when the link handle comes to the center it is automatically locked until the handle controlling the throttle is closed. The operation is, if the vessel is running full speed ahead, to take the throttle and close it. The link handle can then be pulled over and reversed to any speed desired; the throttle is then opened again. I am not enough of an electrician to explain the details of the electrical part of the gear. There are certain stops for handles, marked on the dial in the pilot house, indicating the position of the throttle and of the links. They are further indicated by a couple of tell-tales. These take their motion directly from the parts themselves; that is to say, from the links and from the throttle. The gear, as fitted in use, necessitates the cutting off of the connection between the ordinary operating handles and the steam engineer. This would forbid its use in ferry service, and the inventor has already devised means whereby the engineer can, at any time, work the ordinary handles, which action would ring a bell in the pilot house and show on the tell-tales there exactly what he had done, in case it were necessary for him to interfere with the arrangements by the pilot. I advised gentlemen owning the patents, when they came to me with this gear, that a ferry boat was the worst possible place to try such a thing on. The simplicity of all gear has to be a prime requisite, and I did not think, in designing and placing in operation such a gear, that it would be possible to make it suitable to the conditions of the ferry service. The gentlemen feel absolutely confident, however, that they can do it, and while as yet they have not gone so far that I can say that the device is a practical success, I can say that I have every confidence that they can remedy the defects of application. They have established the principle."

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Fairplay of London thus refers to Harace See's ash ejector: "In addition to being fitted in the Cunard company, White Star company, Hamburg-American, North German Lloyd and other large companies, See's patent ash ejector is now being fitted in the United States, German, Dutch and Austrian navies. Our admiralty as usual lags behind. Col. Henry Platt, who has fitted this ash ejector on board his new steam yacht Elian, has expressed himself in the highest terms of its success, there being no noise, dust or dirt when discharging ashes. The same ash ejector has also been fitted on board Mr. Waller's twin screw yacht Zoraide, Mr. Singer's Xarifa, and no less than four ejectors are being fitted on Mr. McCalmont's powerful steam yacht Giralda, now being built by the Fairfield Ship Building Company.

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$3.00 to Niagara Falls, August 20, via the Nickel Plate road, 10 p. m. Chautauqua Lake free. Toronto $1.00 extra.. Thousand Islands $9.00. Cleveland offices, 224 Bank street, 534 Pearl street, and depots. 16

The Nickel Plate road runs its twelfth annual Niagara excursion August 20, at 10 p. m.; $3.00 round trip. Cleveland ticket offices 224 Bank street, 524 Pearl street, and depots. 16

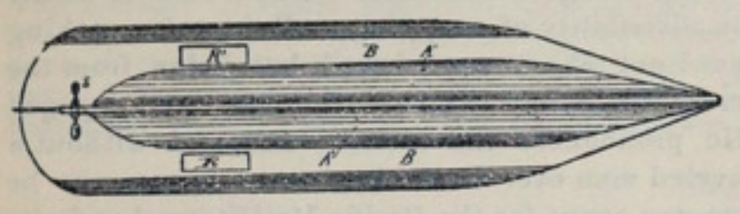
## Illustrated Patent Record.

SELECTED ABSTRACTS OF SPECIFICATIONS OF A MARINE NATURE—FROM LATEST PATENT OFFICE REPORTS.

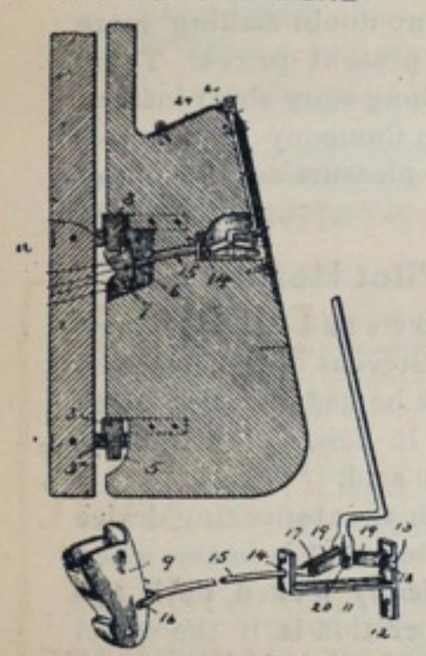
**523,518. SHIP. Albert Foerste, Berlin, Germany. Filed November 6, 1891. Serial NO. 411,027.**

Claim. A vessel having the portion of its hull below the water line, reduced and tapering toward the stern, said reduced portion extending from the bow nearly to the stern, and provided with air boxes projecting downward from the main portion of the hull on opposite sides of the said reduced portion, said boxes extending from the beginning of the bows to stern and forming with the reduced portion longitudinal passages which are narrower at the bow than at the stern.

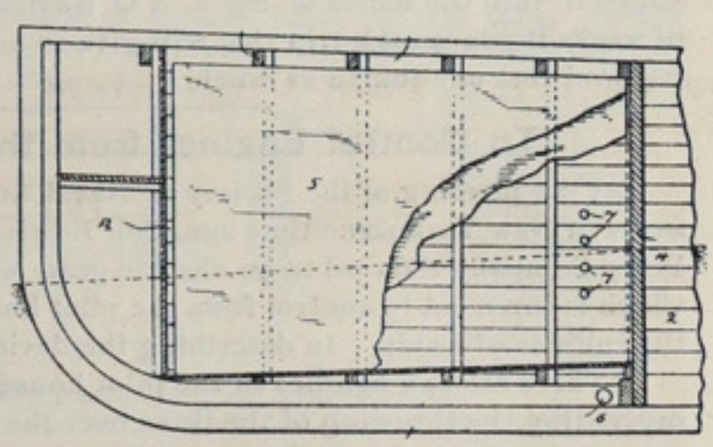
523,518. SHIP.



523,618. RUDDER-LOCK



523,635 NAPHTHA-LAUNCH.



**523,618. RUDDER LOCK. Harry L. Bowdoin, Wilmington, N. C. Filed Jan. 31, 1894. Serial No. 498,623.**

Claim. The combination with the stern post and its eyes of a vessel, of a rudder having depending pintles in its forward edge for removably and loosely engaging the eyes, a metal bearing plate arranged in the forward edge of the rudder below the uppermost pintle, a locking-block pivoted between the ears, and having its upper end recessed to receive the pintle, a metal U-frame arranged in an after recess in the rudder and having its forward end perforated, a connecting bar passed through the perforation, and loosely connecting at its front end with the locking block, an angle lever having its opposite ends connected to the rod and to the frame, and the reciprocating operating rod arranged in a channel in the rudder and pivoted at its lower end at an intermediate point on the angle.

**523,635. NAPHTHA LAUNCH. Clement Gould, Mamaroneck, N. Y. Filed April 25, 1894. Serial No. 508,947.**

Claim. A naphtha launch having at its forward end a compartment separated from the rest of the launch by a water tight bulkhead, a naphtha tank within said compartment, holes 6 to permit entrance of sea water into the compartment to surround the naphtha tank and series of holes 7 at the water line which permit the discharge of the circulating water from the compartment, also the discharge of naphtha which may leak from the tank or escape into the tank in filling.

## Statistics of Vessels Built in the United States.

Although statistics relative to ship building in this country, prepared by the commissioner of navigation at the close of the treasury department's fiscal year, which ends with June 30, do not usually appear until the commissioner's report is issued in November or later, Mr. Chamberlain has this year given out some advance information on the subject.

Records of the bureau of navigation, treasury department, show that during the fiscal year ended June 30, 1894, there were built in the United States and officially numbered 538 wooden sailing vessels of 37,719 gross tons and 308 wooden steam vessels of 44,158 gross tons. During the same period three iron or steel sailing vessels were built of 4,750 tons and forty-five iron or steel steam vessels of 46,776 tous. Sailing vessels, wood and iron, aggregated 541 in number and 42,460 tons in measurement. Steam vessels, wood and iron, aggregated 353 in number, and measured 91,934 tons. The entire number of vessels built and numbered was 894, the tonnage being 134,394. Unrigged vessels are not included in this statement.

Chautauqua Lake free August 20 in connection with a $3.00 Niagara Falls excursion ticket via the Nickel Plate road. Cleveland ticket offices 224 Bank street, 534 Pearl street, and depots. 16

## Around the Lakes.

Gen. Poe will next week call for proposals for operating machinery for the new 800-foot lock, St. Mary's Falls canal.

Fifteen feet of water at the Sault canal is certainly a factor of importance in freight matters. The draft this season is unprecedented.

L. Gearing of Detroit, lowest bidder on the St. Mary's Falls canal power house job, described in previous issues of the REVIEW, proposes to furnish material and erect the structure for $118,807.

Commander O. F. Heyerman, U. S. N., who was well known in connection with the light-house service on the lakes, is recovering from a stroke of paralysis, which he suffered at his home in Detroit some time ago.

The Minch Transportation Company, organized in Cleveland a few days ago, is made up of owners of the new steel steamer I. W. Nicholas, which will be launched at the yard of the Cleveland Ship Building Company on the 11th inst.

The funeral of Captain John Hansen, an old time lake captain and vessel owner, took place in Chicago Thursday. He died in Christiana, Norway, June 30th and his remains were brought to this country for burial.

There will be no formal opening of the Hay lake channel. Gen. Poe announces that the channel is now open for all boats that wish to use it. The light-house officers are arranging matters preparatory to lighting the channel but this work will probably not be completed for some time to come.

Minnie E. Kelton is the name selected for the lumber steamer building at the yard of F. W. Wheeler & Co., West Bay City, and of which Capt. Alex. Beggs, last season in the steamer E. R. Doty, will be managing owner. The boat is about ready for launching. She is 185 feet over all, 35 feet beam and 12 feet depth and will carry 700,000 to 800,000 feet of lumber.

Three new steamers are classed in the Inland Lloyds supplement for August. They are: Harvey H. Brown, 2,202 net tons, $200,000 valuation, A1 rating, E. M. Peck, Detroit, managing owner; Madagascar, 911 net tons, $85,000, A1*, James Davidson, West Bay City; Nicaragua, 912 net tons, $85,000, A1*, James Davidson, West Bay City. The Lake Erie Transportation Company's steamer Geo. F. Gould, 1,790 net tons, is rated A1 and valued at $165,000. The whaleback barges 129, 130, 131, 132, 133, and 134, all of which went into commission last year, have just been rated. They are of 1,266 net tons each, rate A1, and are valued at $80,000 each.

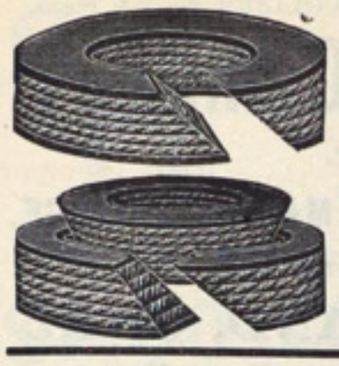
Mr. Harvey D. Goulder will not be a candidate for the common pleas judgeship in Cleveland. Vessel owners were not aware that Mr. Goulder had seriously considered the question of seeking the position until it was announced that he had received the endorsement of the lawyers of the city. At a meeting of the finance committee of the Lake Carriers' Association in Cleveland, Tuesday, resolutions requesting Mr. Goulder to withdraw his candidacy were presented by a committee composed of Capt. C. E. Benham, Mr. B. L. Pennington and Capt. Wm. S. Mack, and they were of such a character that there is no doubt of Mr. Goulder complying with the desire of the association.

With the launch of the wooden steamer Madagascar, which occurred at Capt. James Davidson's ship yard, West Bay City, Saturday, new work in that yard was at an end, although there is of course no telling when other boats may be begun. The Madagascar is 257 feet long, 37 feet beam and 14 feet hold in the shoalest place on top of floor keelsons. She was engined by the Frontier Iron Works of Detroit and built under special survey for class in the United States Standard Register. The engines are triple expansion, with cylinders 16,25 and 42 inches diameter and 34 inches stroke of piston Wickes Bros. of Saginaw built the boiler, which is of the Scotch type, 12 feet, 3 inches in diameter, 12 feet long allowed 160 pounds pressure. This boat is equipped with the Howden system of forced draft. The Globe steam steerer, made by the Globe Iron Works Company of Cleveland is used, and the American Ship Windlass Company of Providence, R. I., furnished the steam windlass and steam capstan. There are also deck hoists and steam pumps aboard in case of accident.

One large and two small torpedo boats are to be built with an appropriation of $450,000 contained in the naval appropriation bill. It would seem that a determined effort on the part of any of the leading ship building companies on the lakes, both in the matter of equipping a plant for such work and in overcoming the alleged treaty restrictions, would result in some of the contracts of this kind coming to the lakes.

Now it is said that the St. Louis, first of the American line passenger ships being built by the Cramps, is nearly plated and will be launched in October. According to newspaper dispatches some time ago, this boat was to have been launched on July 4. The St. Paul is not so far advanced, but she is reported as being also nearly plated.

August 20, excursion to Niagara Falls $3.00 round trip via the Nickel Plate road. Cleveland ticket offices 224 Bank street, 534 Pearl street. 16



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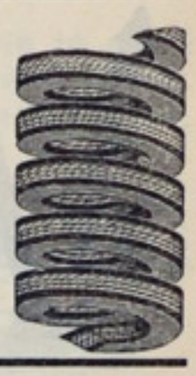

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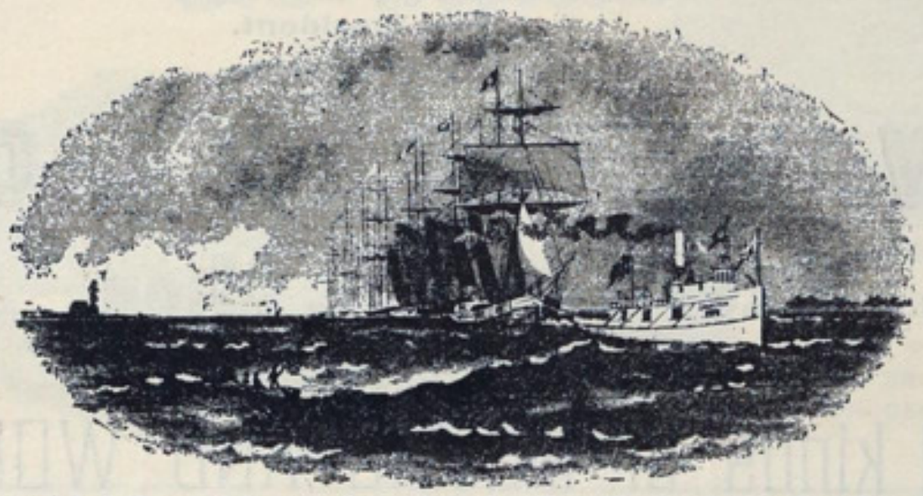

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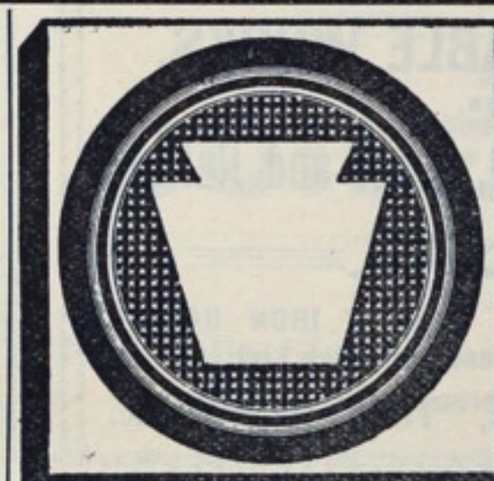

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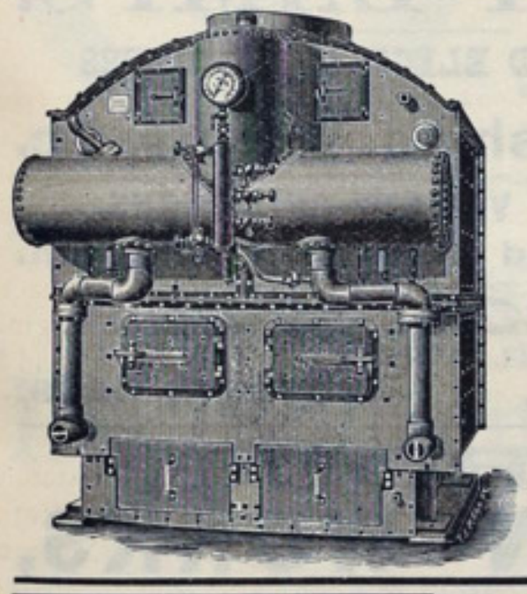

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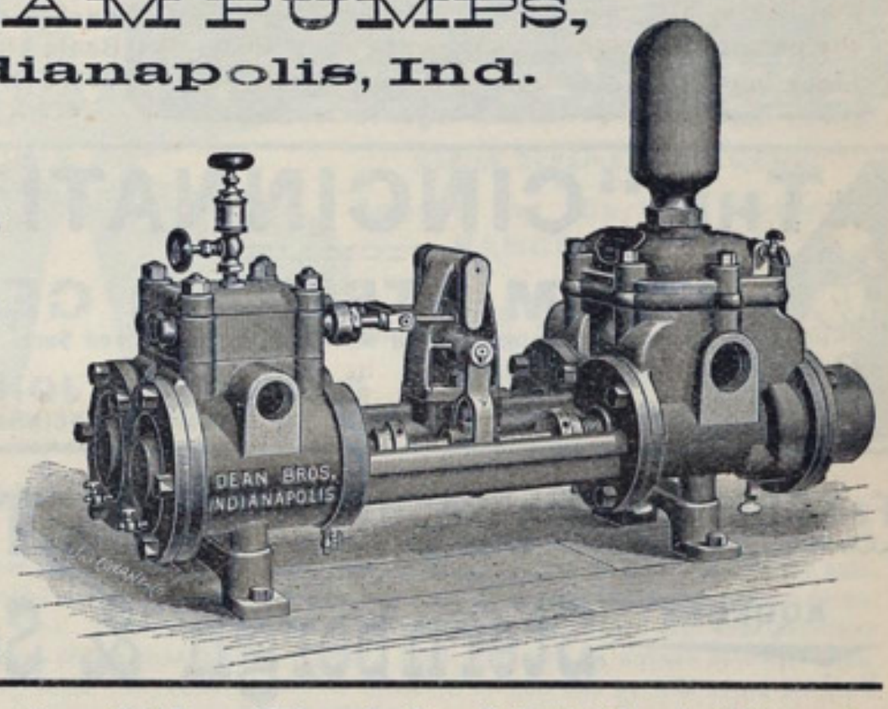


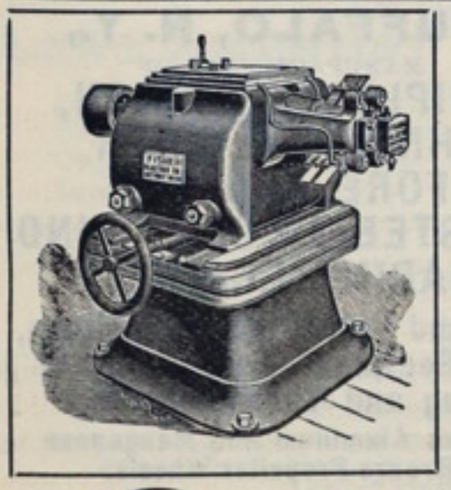

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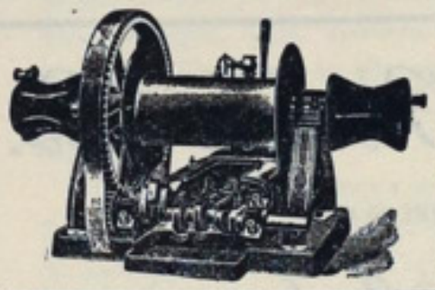

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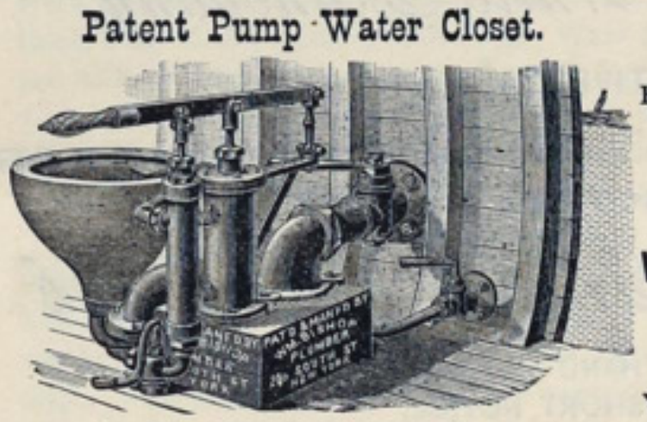

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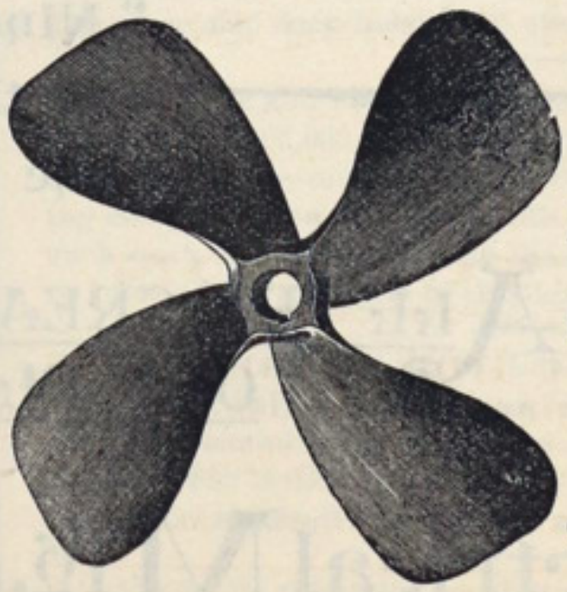

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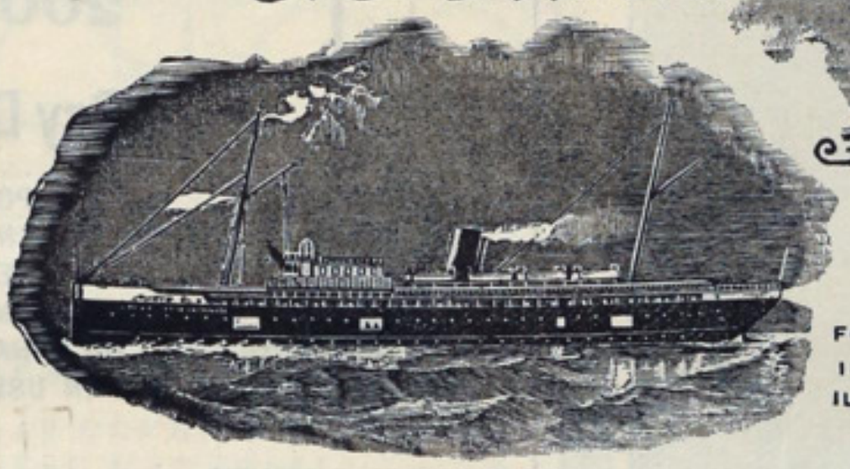

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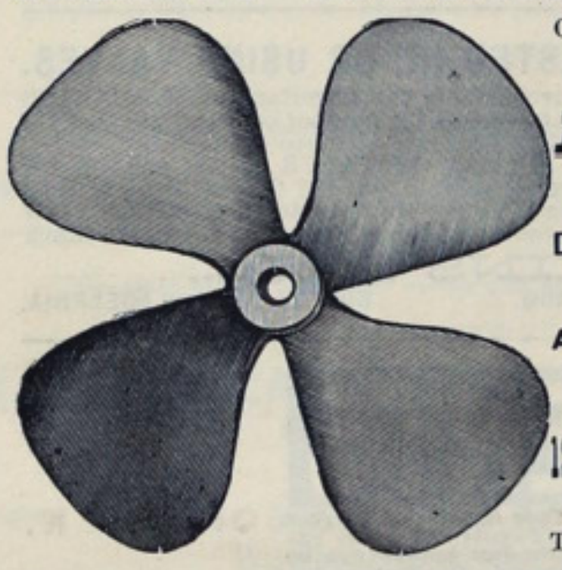

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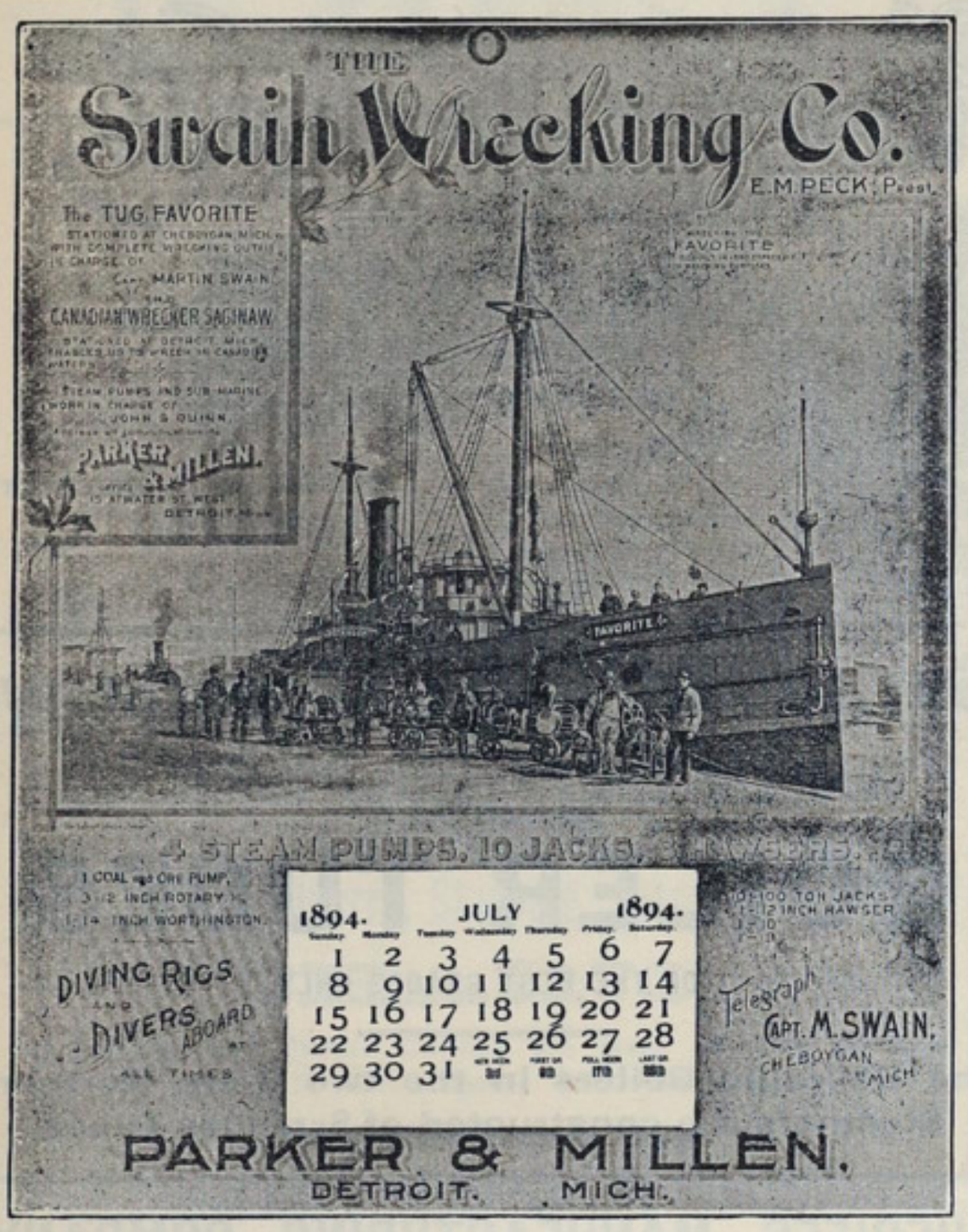


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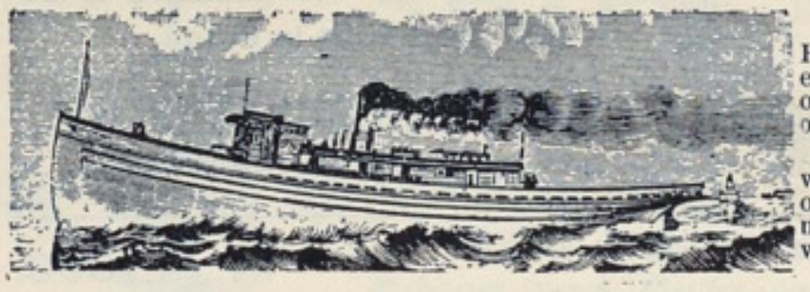

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References: American Steel Barge Co.;
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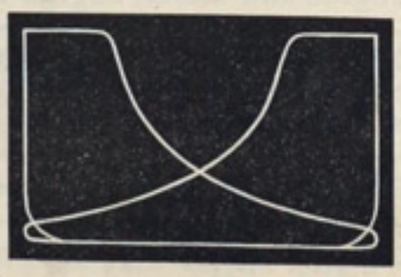

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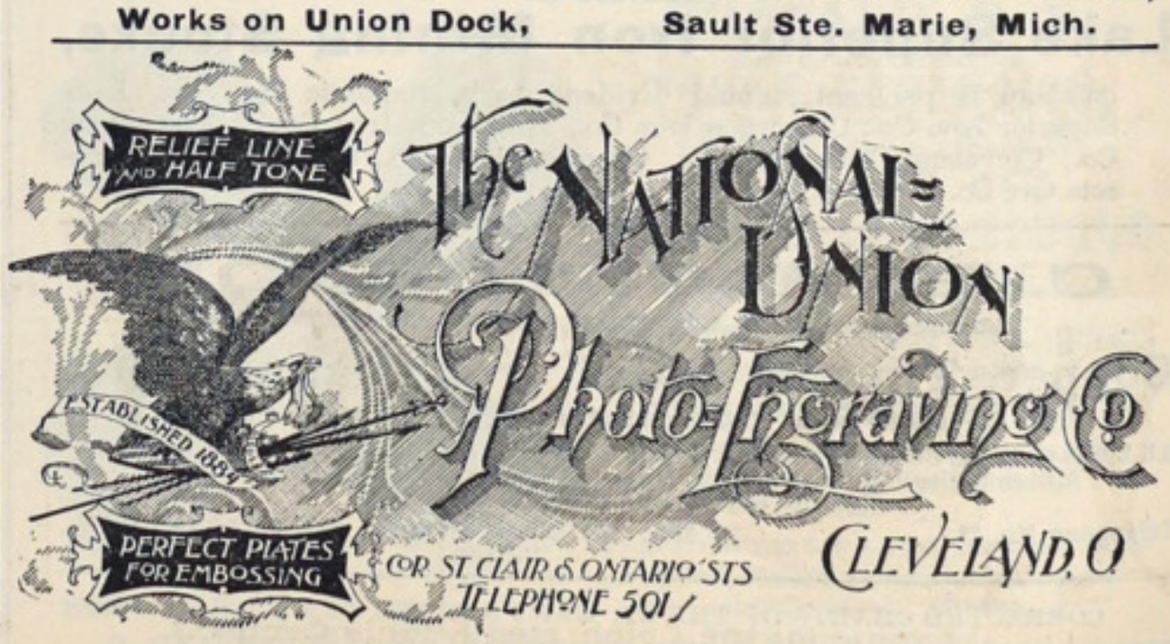

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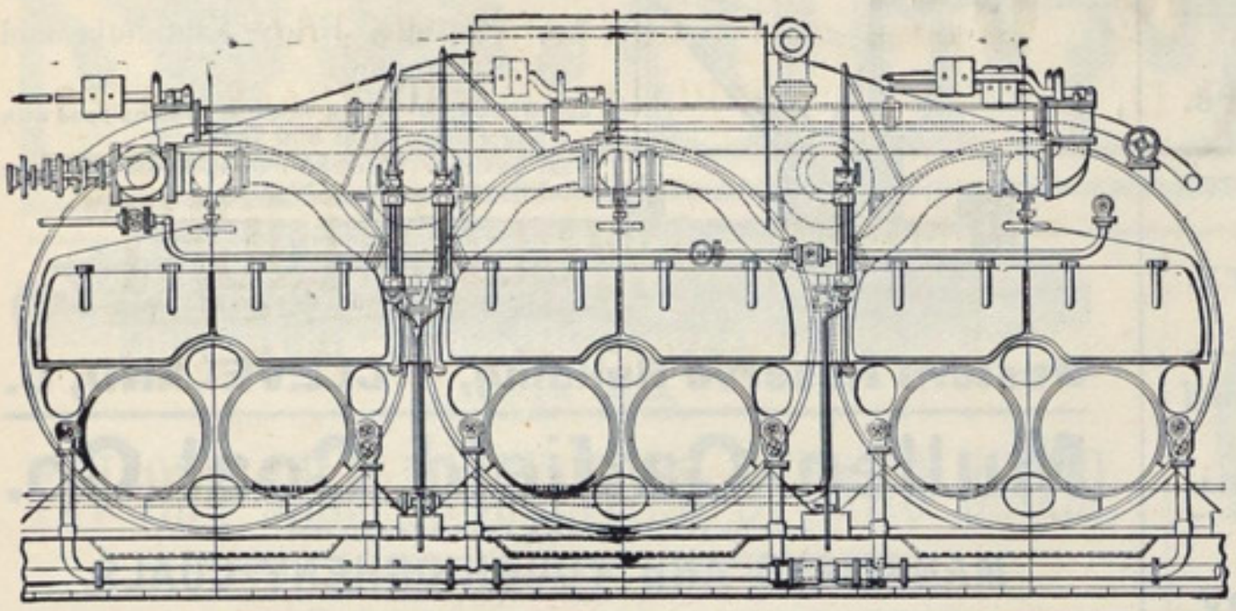

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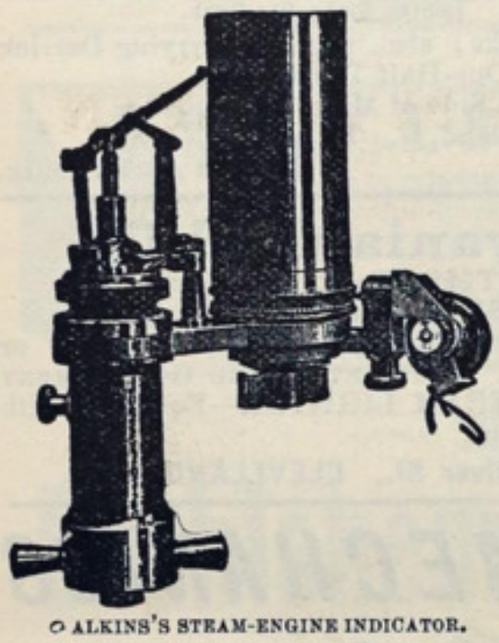

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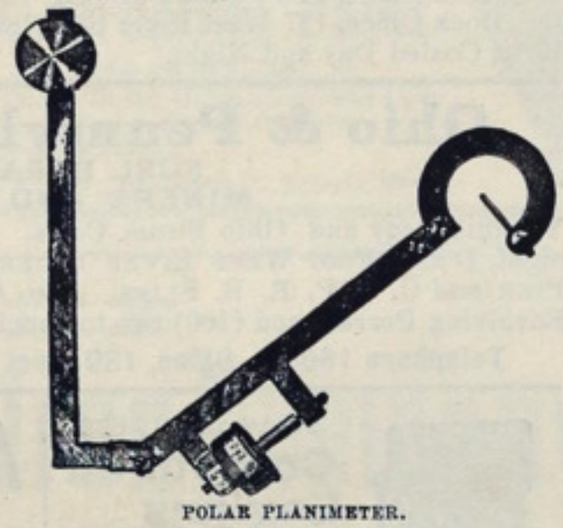

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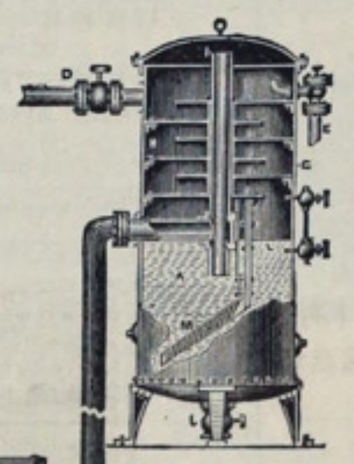

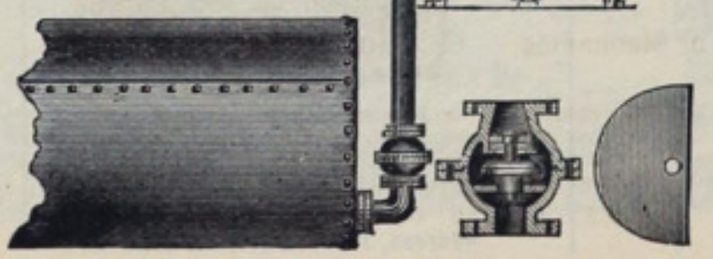

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B.—Boiler.
C.—Feed pipe to boiler.
D.—Steam pipe.
E.—Water supply pipe.
F.—Check valve.
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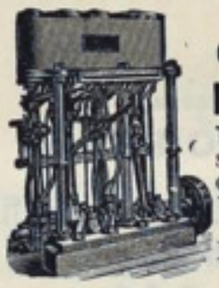

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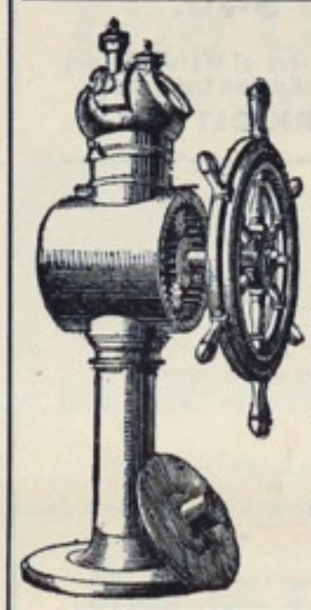

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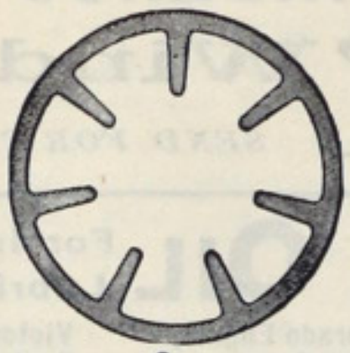

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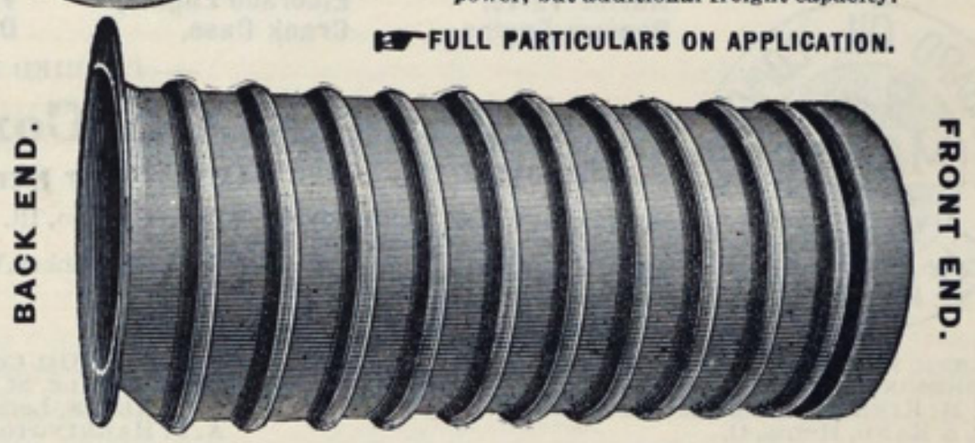


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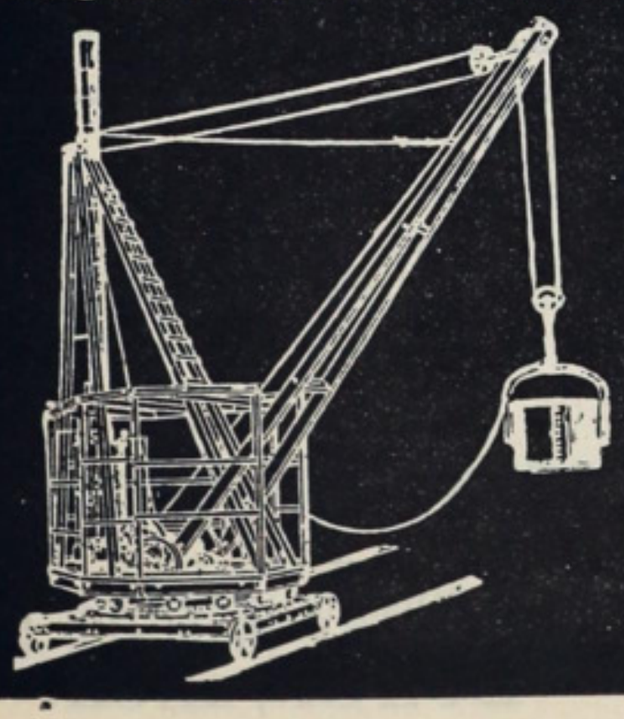

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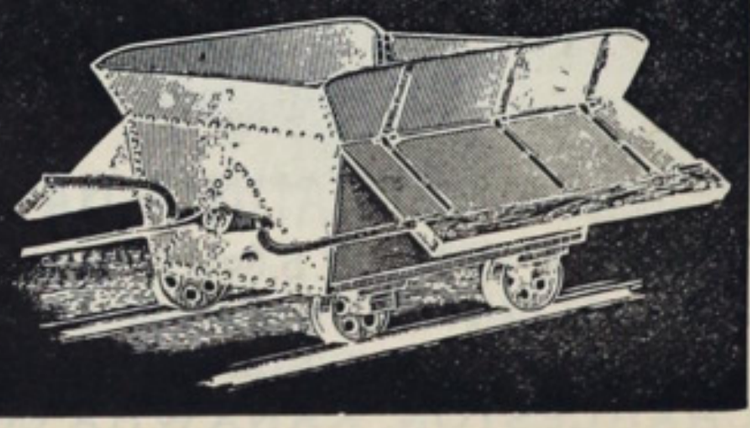

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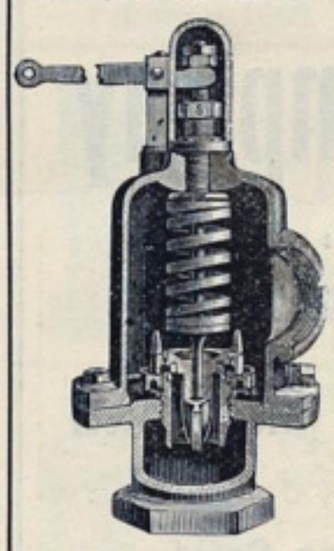

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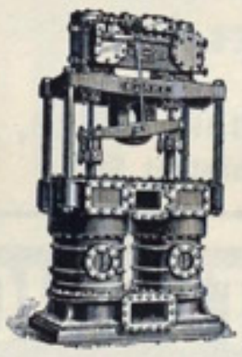

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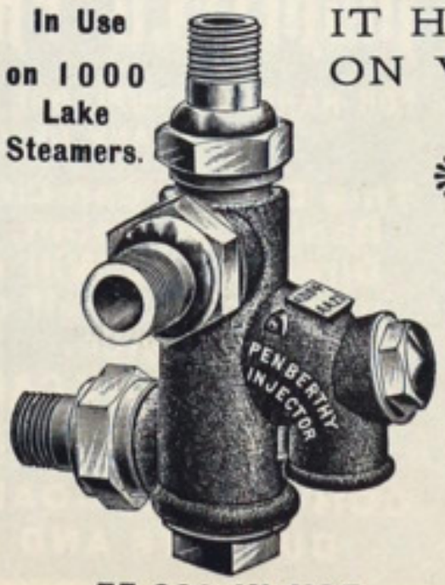


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